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COVID-19: THE SCIENCE BEHIND THE MASK

Factsheet | HGIC 4381 | **Published:** Sep 23, 2020

COVID-19 is the disease that is caused by the SARS-CoV-2 virus. SARS-CoV-2 is a new virus that scientists are working hard to understand. The origin of the virus, how it is spread, and strategies that can be taken to limit the spread are just a few of the things being studied. With so much new information coming out, it can sometimes be difficult to decide if recommendations for decreasing the spread are based on science. The following provides the science behind the recommendations for wearing face masks to reduce the spread of the SARS-CoV-2 virus that causes COVID-19.

A study was conducted by researchers in March 2020 to determine if masks and social distancing are effective ways of decreasing the spread of COVID-19 (Chu et al.). This was a special kind of study called a meta-analysis. A meta-analysis gathers many studies that have already been completed, and the results have been published. The studies are analyzed for quality, and then the data from the studies are all put together in one large pool and re-analyzed as if the data came from one big study. This kind of study has limitations, but it can be an effective way of gathering large enough amounts of data to draw some early conclusions about public health recommendations.

The researchers chose studies based on the quality of the data. Because there were so few studies specifically on COVID-19, studies on the use of masks and social distancing to prevent influenza were used in its place. When the data from 172 studies across 16 countries and 6 continents were analyzed, researchers found that the effectiveness of masks versus no masks to prevent influenza-like illness yielded a large reduction in the spread of the disease. This reduction was notable whether the mask was a multi-layered surgical mask or a simple cotton face covering. N95 respirators were even more effective at reducing the transfer of the virus from one person to another. While these studies weren't directly measuring the use of face masks for COVID-19 specifically, researchers concluded that if these studies showed that masks were effective at reducing the spread of influenza, we could reasonably apply these findings to COVID-19. These results provided enough evidence to inform the World Health Organization, who has recommended wearing masks as a low-cost, simple strategy for decreasing the spread of COVID-19.

In August, more data came out from the South Carolina Department of Health and Environmental Control (DHEC) that further supports wearing face masks to decrease the spread of COVID-19. This data is specific to South Carolina and to COVID-19. In South Carolina, some places have mask orders, while others do not. Places with mask orders represent about 42% of the SC population or 2,100,000 citizens. To determine the impact of mask-wearing on the spread of COVID-19 in South Carolina, DHEC compared the number of COVID-19 cases in places with and without mask orders. DHEC found that mask-wearing resulted in a 66.5% greater decrease in the number of COVID-19 cases after just one week of face mask orders compared to places without mask orders. Dr. Michael Kacka, DHEC Physician and Chief Medical Officer, concluded, "The data reinforces what we've already known: the proper wearing of masks helps stop the spread of this deadly virus."

So now that we know it works, how do you wear a mask to maximize the benefit?

When it comes to wearing masks, the CDC provides the following guidance:

- Look for masks that have two or more layers for maximum benefit
- Position the mask so that it is over your nose and mouth and secured under your chin
- Don’t put masks on children younger than two years old or on people who cannot remove the mask without assistance
- People who have trouble breathing should not wear masks
- To ensure adequate supplies for healthcare workers, do not wear N95 respirators
- Wash your hands before putting on a mask
- The CDC does not recommend using gaiters or face shields as the effectiveness of these for protection against COVID-19 is unknown at this time

Additionally, the way a mask is worn, taken off, and cleaned are important factors for maximizing the benefits of wearing masks. The CDC provides the following guidance:

- **Do not wear a mask:** around your neck, on your forehead, under your nose, only on your nose, on your chin, dangling from one ear, on your arm.
- When taking off a mask, handle it only by the ear loops or ties. Then fold the outside corners together and wash your hands immediately after removing the mask.
- If using a cloth mask, be sure to wash it with your regular laundry. When washing, use regular laundry detergent, the warmest appropriate water setting, and the dryer’s highest heat setting. Be sure to leave it in the dryer until it is completely dry.

Wear mask to protect your friends.
Photo credit: cdc.gov/coronavirus

Sources:

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2. Centers for Disease Control and Prevention. *Coronavirus disease 2019 (COVID-19).* Retrieved from **https://www.cdc.gov/coronavirus/2019-nCoV/index.html** September 16, 2020.

3. Department of Health and Environmental Control (DHEC). (September 2020). *DHEC's third data analysis of mask ordinances continues to show effectiveness of masks; latest COVID-19 update.* September 2020. Retrieved from **https://scdhec.gov/news-releases/dhecs-third-data-analysis-mask-ordinances-continues-show-effectiveness-masks-latest** September 23, 2020.

Originally published 09/20

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